Class – U.G. Semester - IV

subject - chemistry (MJC)

Paper – MJC - IV

Topic – Properties of Glycerol (continue)

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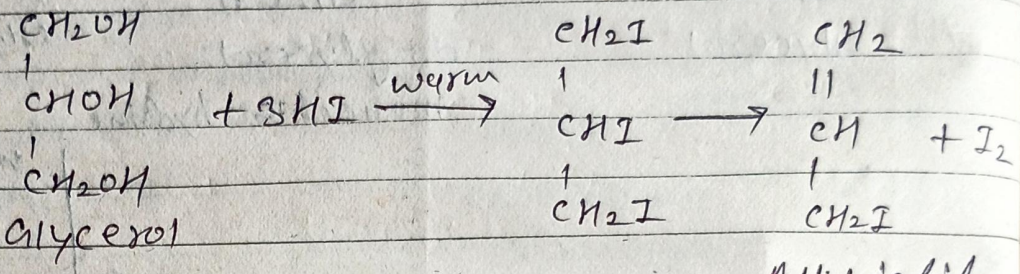
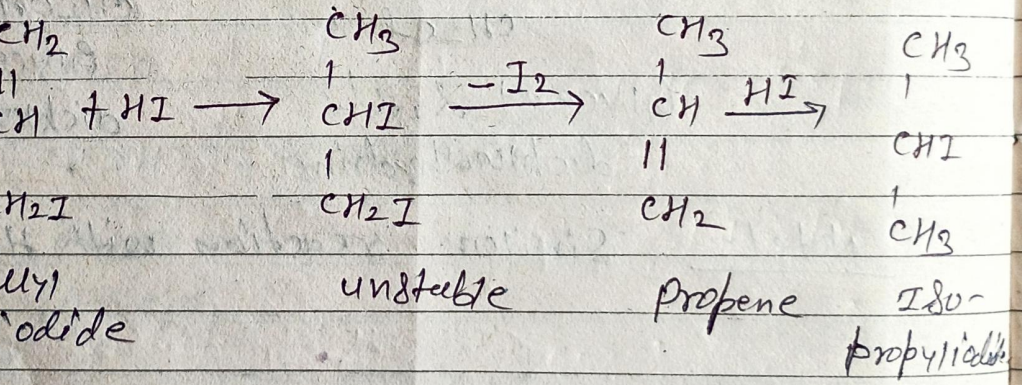
(iv) **Reaction with HI!-** Glycerol reacts with HI in following two conditions! —

a. When glycerol is warmed with a small amount of HI to give allyl iodide.

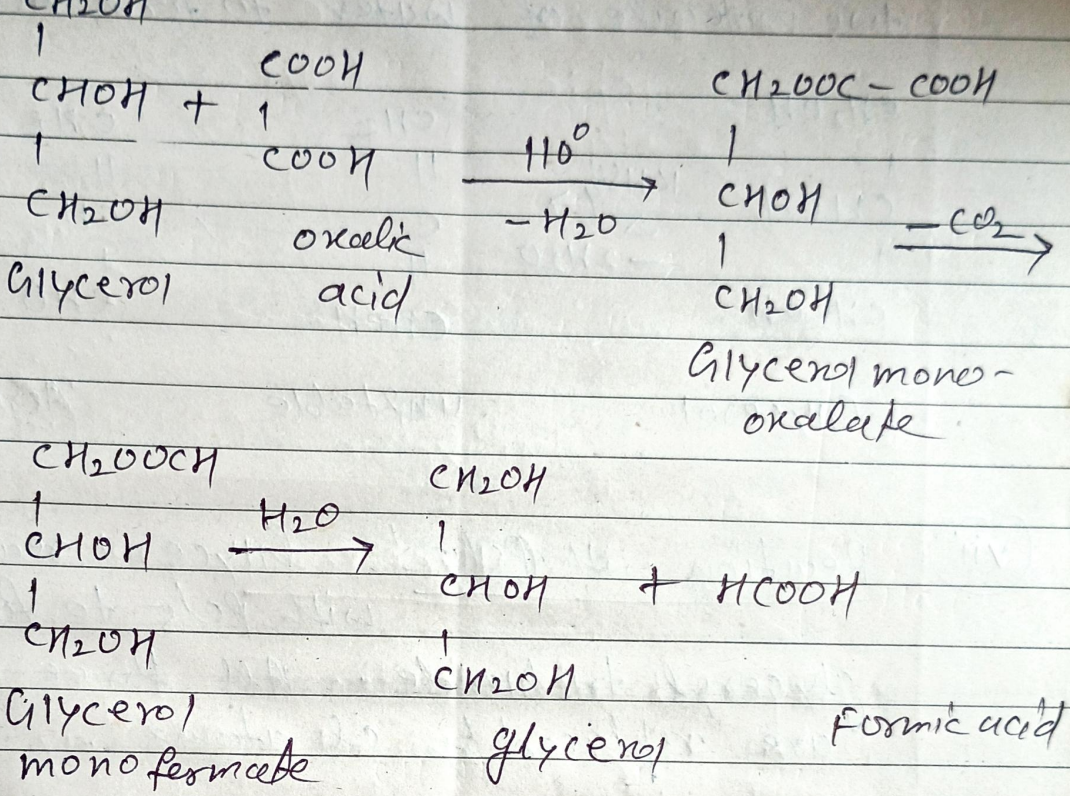


b. When it is heated with a large amount of HI, the allyl iodide first formed and is reduced to propene, which is in presence of excess of HI forming isopropyl iodide.

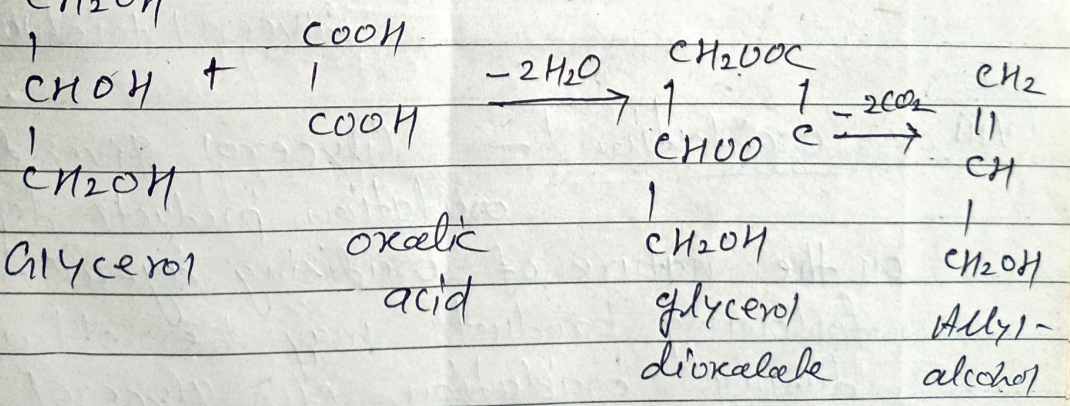


(v) **Reaction with oxalic acid!-** Glycerol reacts with oxalic acid in different conditions and give different products.

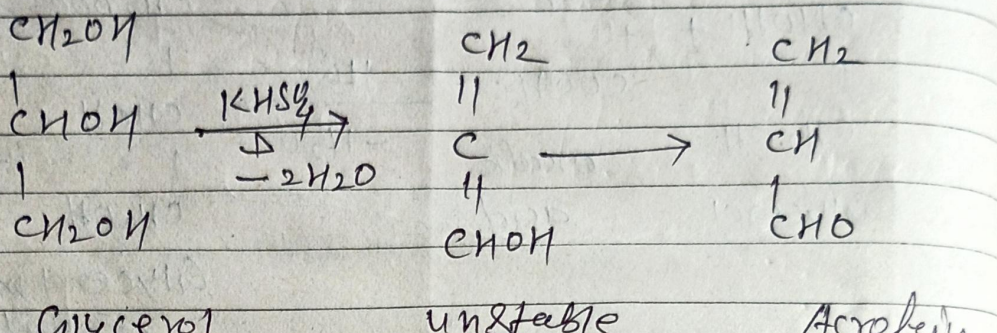
a. when it is heated with excess of oxalic acid at 110°C to give formic acid.



b. when glycerol is treated with oxalic acid at 260°C, allyl alcohol is formed.

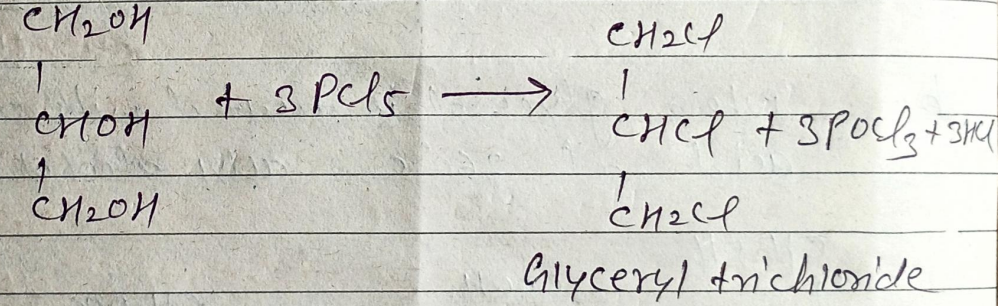


(vi) **Dehydration :-** When glycerol is heated with $KHSO_4$, it eliminates two molecule of water to form Acrolein.



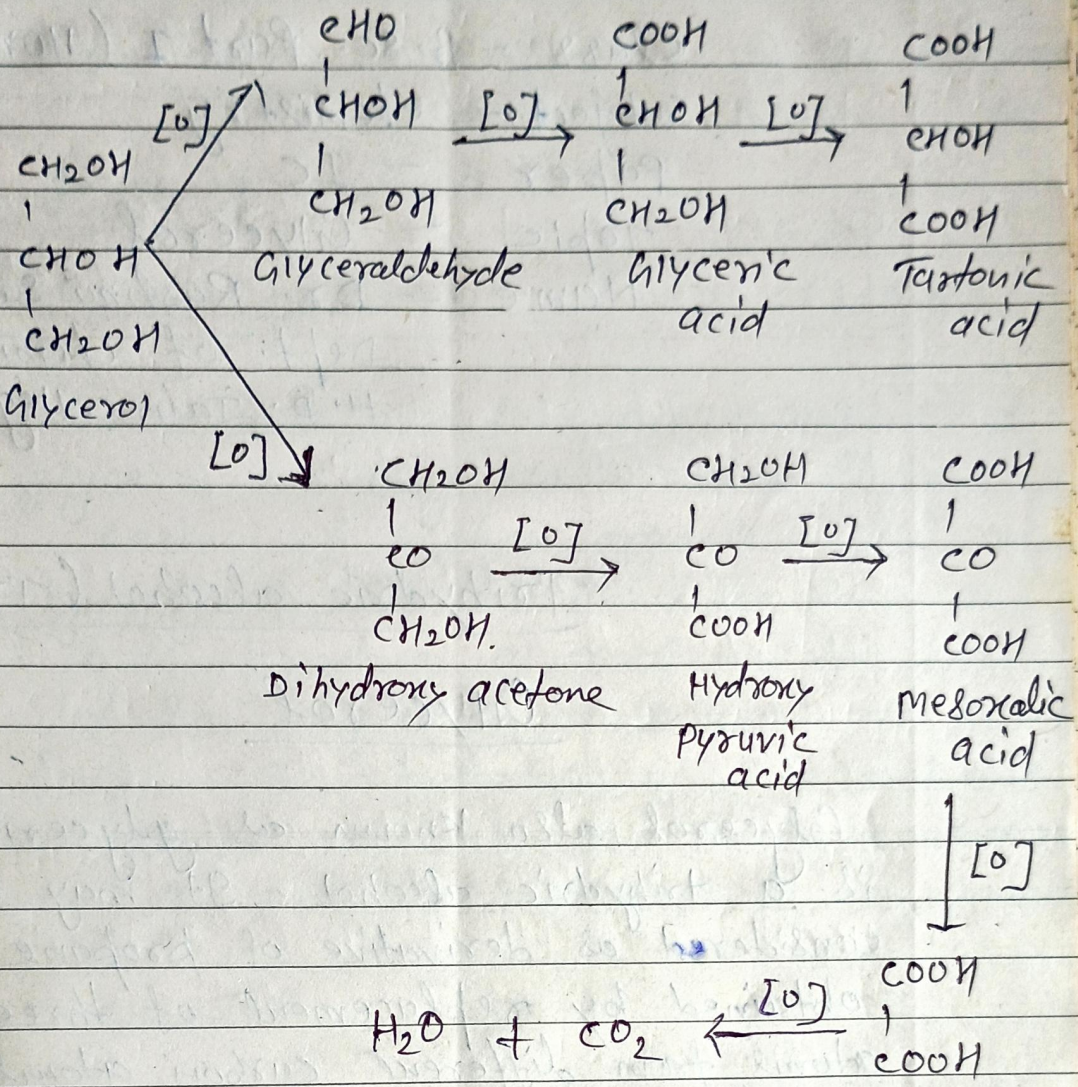
Glycerol — unstable — Acrolein

(vii) **Reaction with PCl_5 :-** Glycerol reacts with PCl_5 to form glyceryl trichloride. All three -OH gr. are replaced by Cl atoms.



Glyceryl trichloride

(viii) **oxidation :-** Glycerol gives different oxidation products depending on the nature of oxidising agent. The following products may be obtained during oxidation of glycerol.



a. Dilute HNO_3 oxidises glycerol into glyceric acid and tartonic acid.

b. oxidation with conc. HNO_3 gives mainly glyceric acid.

c. oxidation with $Bi(NO_3)_3$ gives mainly mesoxalic acid.

d. oxidation with Br_2 water or NaOBr or Fenton's reagent ($FeSO_4 + H_2O_2$) gives a mixture of glyceraldehyde and dihydroxy-acetone.

e. with Solid $KMnO_4$ glycerol oxidised to oxalic acid and CO_2. since this reaction is -